Exhibit 6

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF MICHIGAN

UNITED STATES OF AMERICA	)	
Plaintiff,	)	Civil Action No.
v.	)	
DTE ENERGY COMPANY, and DETROIT EDISON COMPANY	)	
Defendants.	)	

DECLARATION OF ALAN MICHAEL HEKKING

I, Alan Michael Hekking, declare as follows:

1. This Declaration is informed by my 21-½ years of personal knowledge and experience gained while working for the Tennessee Valley Authority (TVA) in various engineering and management positions at its coal burning power plants and in the central office, and by knowledge gained through my involvement in the EPA utility enforcement initiative of which this litigation is a part. My experience is detailed below and in my attached resume. I am at least 18 years of age and competent to testify to the matters contained herein.

My Background and Experience

2. In more than two decades at TVA, I worked at a number of coal-fired power plants in positions including Mechanical Maintenance Supervisor, Assistant Plant Manager, and finally Plant Manager.

3. I was involved in major capital improvement projects including boiler component replacement projects. Components replaced include burners and cyclones, boiler floors and walls, economizers, primary and secondary superheaters, and reheaters. My involvement included project scope development, project authorization, detailed planning and implementation, budgeting and control of expenditures, and evaluation of results.

4. In 1994 I took a position as the supervisor of a local air pollution control program in Memphis, Tennessee. I supervised a group of engineers performing permitting, new source review, compliance monitoring, and enforcement activities. I remained in that position for approximately seven years. In 1997, while working in this position, I became involved with the U.S. EPA utility enforcement initiative, performing compliance inspections at coal fired power plants in EPA Regions 3, 4 and 5.

5. I began working as a consultant for the Department of Justice in 2000, serving as a utility expert. I provided the expert testimony on the subject of routine maintenance in the Tennessee Valley Authority case (heard by the Environmental Appeals Board) in the summer of 2000. I also provided expert testimony on the subject of routine maintenance in *United States v. Ohio Edison Company, et al.* (S.D. Ohio), *United States v. AEP, et al.* (S.D. Ohio), in *United*

States v. Illinois Power Company, et al. (S.D. Ill.), and in *United States v. Cinergy* (S.D. Ind.). I have and still am working on other cases in the utility enforcement initiative. I am being compensated for my work in this case at a rate of $90 per hour (with higher rates for field work and testimony).

The Power Plant and the Major Components of the Boiler

6. Power plants generate electricity using three major components: the boiler, turbine, and generator. A boiler is a large building-like structure 6-12 stories high in which coal is burned and the energy (heat) from the combustion process is transferred to water to produce steam. Water and steam are carried through the boiler by thousands of tubes. The tubes not only form the structural walls of the boilers, but many boiler components are actually assemblies of tubes that hang inside the boiler suspended from the roof and walls.

7. The inside of the boiler is the area where the fuel is burned to produce heat. Water circulating inside the wall tubes absorbs the heat and turns to steam. The steam then circulates through the tube assemblies suspended inside the boiler before it leaves the boiler to generate electricity in the turbine and generator.

8. Fossil fuel-fired steam-electric generating facilities provide electricity through a process that is designed to release the chemical energy of the fuel, convert it to heat energy, mechanical energy and finally electrical energy. The boiler receives the fuel, converts the chemical energy stored in the fuel through combustion, also known as burning or oxidation, and applies the heat energy released by the combustion to convert water in the boiler tubes into steam. The steam is then supplied to the turbine where the heat energy of the steam is converted to mechanical energy in the form of a rotating shaft. The rotating shaft is connected to and turns the generator to produce electricity.

9. The gross unit operating capacity is generally regarded as the output of the generator as described on the nameplate. The nominal rating is the output of the generator under the maximum boiler output conditions; pounds per hour steam flow at a given temperature and pressure. A generating unit can be operated at more or less output than the gross capacity depending upon equipment condition. Therefore, actual generating capacity would be the gross capacity adjusted for equipment conditions.

10. Boilers are composed of two major sections – the radiant section and the convection section. The radiant section includes the furnace, where combustion occurs, and the upper sections of the boiler exposed to the radiant energy. The wall tubes, also called water wall tubes, or furnace wall tubes absorb radiant energy. The secondary superheaters and secondary reheaters (when they are employed) are large bundles of tubes hanging or placed into the upper region of the radiant section of the boiler and absorb radiant energy to heat the steam traveling inside the tubes.

11. The convection section of the boiler is designed to recover the heat energy of the gases through a heat transfer process called convection. The convection section receives the hot combustion gases that have traveled up through the radiant section as the gases turn horizontally and then down towards the boiler exit. In the boiler convection sections, the flue gas flows through the primary superheater, then the primary reheater, and finally the economizer to absorb the heat contained in the flue gas and transfer the heat to the water or steam passing within the tubes. Typical flue gas temperatures are 2,500^{o} F entering the superheater, 1,700^{o} F entering the reheater, 1,000^{o} F entering the economizer, and 750^{o} F leaving the economizer.

12. After the flue gases pass through the economizer and leave the boiler, they still contain a significant amount of heat. The gases at this point can have temperatures as high as 800° F. Air heaters, also know as air pre-heaters, are heat exchangers that recover heat from the exiting flue gas and transfer it to the incoming combustion air leaving the FD fans, prior to entering the windbox. Subsequently, the flue gases, after leaving the air preheater, enter the air pollution control devices for removal of pollutants.

Boiler Water and Steam Cycle

13. The water and steam cycle is a closed-loop process that involves not only the boiler but also several other components. The water and steam cycle begins with feedwater. The feedwater is pumped by the boiler feed pumps to the boiler and is distributed to the boiler wall tubes. Next, the water absorbs the heat released from coal combustion as it flows through the tube walls. The water changes to steam and receives additional heat as it travels through the suspended tube assemblies before leaving the boiler. The steam is then supplied to the turbine where it releases most of the heat energy transferred from the boiler. The steam is converted back to water in the condenser upon leaving the turbine. The water, as condensate, is pumped via a boiler feed pump back to the economizer in the boiler.

14. The water and steam that flow through the tubes of the boiler components control tube metal temperature by removing heat and carrying it from the wall tubes. If this heat transfer did not occur, the tubes would be destroyed almost immediately by the intense heat from the coal combustion. Long-term exposure of the tubes to the temperatures in the boiler leads to tube cracks and leaks even when effective cooling by steam and water occurs. Boiler tubes are periodically sampled and evaluated using metallurgical analysis techniques to determine their status regarding long-term degradation.

15. Each of the main components of the cycle -- the boiler, turbine, condenser, and boiler feed pump are discussed below with emphasis on the boiler water and steam components.

a. Economizer. Feedwater is pumped by the boiler feed pump to the economizer. The economizer is the last component that receives heat energy from the combustion gas and is located in the lowest portion of the convection section of the boiler. The purpose of the economizer is to absorb as much of the heat remaining in the flue gases as possible before the gases exit the boiler. The feedwater enters the economizer inlet header, which distributes the feedwater to the economizer tubes. The economizer tubes are looped back and forth horizontally across the direction of the gas stream.

b. Steam Drum and Waterwalls. Feedwater exits the economizer and enters the main steam drum. The main steam drum is a very large tube or cylinder – some main steam drums are almost four feet in diameter. The steam drum length spans the full width of the boiler. The steam drum is designed to distribute the feedwater to the boiler water wall tubes and receive the steam that rises up from the tubes after heating. Downcomers transport the feedwater from the steam drum to the lower waterwall headers that distribute the feedwater to the furnace wall tubes inside the boiler. These tubes carry water to be converted to steam absorbing the radiant energy released by combustion. The steam then rises in the tubes and is returned to the steam drum. The steam and water are segregated within the drum. The steam leaving the drum passes through steam-water separators to remove any remaining water from the steam, and the water is returned to the downcomers.

c. Superheater. The superheater is used to increase the energy content of the

steam, thereby raising the energy state to super-saturation. Superheaters are often comprised of two sections – the primary superheater and the secondary superheater. The primary superheater is an assembly of tubes located at the top of the convection section upstream (in the direction of flue gas flow) of the economizer (this area is also called the heat recovery area of the boiler). Primary superheater construction appears similar to the economizer shape and orientation, but the tube material is selected to withstand the higher gas and steam temperatures than those experienced in economizers.

The steam from the drum first enters the primary superheater inlet header, which distributes it to the individual tubes. The inlet header is a large cylindrical tube or pipe usually one to two feet in diameter. The header is connected to the inlet of each primary superheater tube element and is therefore as long as the primary superheater is wide. The steam flows through the tube elements reversing direction several times as the tubes turn 180° back and forth across the gas flow. The steam exits the tube elements to the outlet header. The outlet header is similar in design to the inlet header and collects the steam for transfer to the secondary superheater.[1]

After partial superheating in the primary (first) superheater, the steam is directed to the secondary superheater. Secondary superheaters are located in the upper region of the radiant section of the boiler where the gas temperature is high and radiant energy is available for absorption. The steam leaving a secondary superheater usually has a temperature of approximately 1,000°F and attains the highest energy level of the steam cycle. The steam is then sent to the inlet of the high pressure (HP) turbine.

d. Reheater. The steam leaving the HP turbine is directed to the reheater section of the boiler. Reheaters consist of inlet and outlet headers connected by assemblies of tubes suspended in the flue gas flow to absorb heat energy. Reheaters recover additional heat energy from the flue gas to increase the energy state of the steam in order to reduce water formation in the turbine. In some boilers, two reheaters are employed, a primary heater and a high temperature reheater.

e. Boiler Tube Life. Conditions inside of an operating boiler can affect the life of boiler tubes. The four predominate impacts on tube life are thermal cycling (heating up and cooling down), external corrosion from exposure to caustic agents, erosion from the high flue gas velocities and entrained ash particles, and internal corrosion caused by poor water quality. During idle periods it is customary to blanket the boiler with inert nitrogen to minimize corrosion. Tube leaks resulting from these different failure mechanisms are the overwhelming reason for the replacement of boiler components described in this declaration.

Power Plant Maintenance

16. In a coal burning power plant, the maintenance group is responsible for the day-to-day maintenance of the various pieces of installed equipment as well as the structures and physical property. It is also responsible for the planning and execution of the maintenance activities that are performed during planned and unplanned periodic unit shutdowns. The group consists of supervision and management, engineering and technical support, and a wide variety

[1] The term "element" is used frequently to describe sets of economizer, reheater or superheater tubes fabricated into specific sizes and shapes. A complete set of elements constitutes an economizer, reheater or superheater section.

of skilled and semi-skilled craftsmen.

17. In a power plant, maintenance activities can be subdivided into three broad skill groupings: mechanical, electrical and instrumental. The maintenance staff consists of mechanics with skills in each of the above skill groupings. Typically, the mechanical group has the majority of the craftsmen possessing the skills of welding, metal fabrication, machine shop metal working, carpentry, piping systems and valve repair, and machinery disassembly, inspection, repair and reassembly. It is responsible for the repair of mechanical equipment and systems such as boilers, turbine-generators, pumps, compressors, fans, pulverizers, and piping systems. Contractors are used extensively to supplement the maintenance workforce particularly during scheduled annual outages.

18. The life and reliability of power plant equipment is directly related to the design of the equipment, proper operation, and the type and amount of maintenance performed. Proper operation includes use of the equipment for its designed purpose and operation within designed operating parameters. Maintenance includes preventative activities such as regular lubrication changes, use of diagnostic tools, and other regularly scheduled activities as the service and the manufacturer recommends.[2]

19. On a day-to-day basis, the maintenance crews respond to maintenance job orders from operations personnel as breakdowns and equipment problems develop. There can be many job orders generated during the course of a 24-hour day.

20. Power plant maintenance can be characterized as preventive, predictive, and reactive (or corrective). Preventive maintenance are those repetitive tasks that are performed on a regular schedule of either elapsed time or hours of operation, much like changing the oil in your car every 3,000 miles. One could further define preventative maintenance as maintenance recommended by the equipment manufacturer at given intervals to insure proper operation of the equipment. Intervals are typically defined as being equipment-specific, days, months, or based upon operating hours. Predictive maintenance is where one monitors the performance of a piece of equipment, observing for trends, and performs maintenance in response to the results of equipment monitoring, such as lubrication oil analysis and vibration. Thus, monitoring indicates that a failure will occur in the future and repairs will be made to prevent the failure. In contrast, one could describe reactive maintenance as "fix it after it breaks."

21. In general, maintenance work in a power plant can also be divided into three categories: running maintenance, forced outage maintenance, and planned or scheduled outage maintenance. Running maintenance is performed while the units are in operation. Examples include valve repair, steam and water leak repair, pump repair, pulverizer maintenance, and preventative maintenance. Forced outage maintenance takes place when a generating unit is removed from service by an unplanned event such as a boiler tube leak.

22. During a forced outage, there are a number of routine maintenance activities that take place every time a unit is out of service. The maintenance group will accumulate maintenance job orders that have been initiated that require a unit shutdown to accomplish. Maintenance job orders that can be completed during a forced outage period, taking into

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[2] *See generally*, STEAM - Its Generation and Use, Chapter 44, Babcock & Wilcox (40th edition, 1992); and COMBUSTION - Fossil Power, Chapter 23, Combustion Engineering (4th edition, 1991).

consideration the anticipated return to service date and the available resources, will be scheduled for work during the downtime. Boiler tube leaks are the predominant cause of forced outages, so a leak test is conducted to locate any tube leaks present.

23. Scheduled outage maintenance occurs when a generating unit is removed from service to perform maintenance tasks that cannot be performed during periods when the unit is in operation or during short forced outages. Generally, although the frequency may vary somewhat, utilities plan scheduled outage maintenance at each unit every 12 to 18 months. These outages are scheduled in the spring and fall when the demand for electricity is minimal and are typically two to four weeks in duration. The maintenance staff at the plant keep an active list of activities planned for execution during each scheduled outage (unless they had been completed during a previous forced outage).

24. Routine boiler maintenance activities that are performed during scheduled annual outages include the following:[3]

- Cleaning of boiler and related ductwork to facilitate maintenance access and inspections;
- Inspection of the furnace and gas path;
- Inspection including non-destructive examination of known trouble areas;
- Individual tube repair/replacement;
- Inspection of tube shields and high erosion areas;
- Inspection, repair and replacement of refractory in the slag necks and troughs;
- Inspection and repair of ductwork and expansion joints;
- Cleaning and inspection of boiler penthouses;
- Water blasting, inspection, stud replacement and new refractory (cyclone fired boilers);
- Inspection and repair of boiler casings, doors and inspection ports;
- Inspection and repair of gas path deflection baffles and flow distributors;
- Inspection and repair of all dampers (air and gas);
- Remove, disassemble, inspect and repair ignitors;
- Cleaning, inspection and repair of external steam header vestibules;
- Pressure test of water and steam tubing components;

[3] *See generally*, State-of-the-Art Maintenance and Repair Technology for Fossil Boilers and Related Auxiliaries, EPRI document CS-4840, Project 2504-1, March 1987.

- Chemical cleaning of water-side tubing to remove internal deposits.

In addition to the routine boiler maintenance activities listed above, there are many more activities normally performed each outage on other plant equipment such as heat exchangers, pulverizers, turbines, generators, condensers, fans, pumps, and motors.

25. Boiler tube leaks cause boiler shutdowns (forced outages), sometimes immediately. Boiler tube leaks must be repaired. Hence, they fall into the category of reactive or corrective maintenance. Upper management approval is not required for the initiation of the tube leak repairs unless the work is out-sourced. The use of contractors sometimes requires only the plant manager's approval. The following discussion describes a typical boiler tube leak repair.

26. For a typical tube leak repair, maintenance personnel will begin opening boiler access doors within a few hours after the unit has been removed from service. Maintenance workers must wait for the boiler to cool down. Initial mobilization by the maintenance department involves working with operations to locate the leak, initiate unit shutdown, gain access, and cool down the boiler. After maintenance has identified the number, location, and type of leak(s), operations personnel will drain the boiler. Once the boiler has been drained and the temperature is tolerable for the workers, tools and materials will be moved into the location of the leak to initiate repairs. Typical tools and materials used are scaffolding, lights, welding machines, oxygen-acetylene torches or saws (for cutting tubes, if necessary), and air hoses for operating pneumatic tools. All of these materials can usually be moved into the work area, inside of the boiler, through the access openings provided as original boiler equipment.

27. Types of tube leaks can be categorized as pinholes, cracks, or ruptures. Repair methods can be categorized as weld repair or replacement. It is common for the initial leak to cause damage to surrounding tubes, particularly when the initial leak was small and the unit continued to operate while the leak was present. The additional damage occurs from the release of the high energy fluid impinging upon neighboring tube surfaces.

28. Weld repairs can either be a padweld,[4] in the case of a pinhole, or a grind out and weld repair[5], in the case of a crack. Weld repairs are usually favored over replacement because the amount of time to conduct repairs is generally much shorter. If there is extreme urgency to return the unit to service, weld repairs can be made that serve as a short-term fix, and permanent repairs can be made during the next planned unit outage.

29. When the damage to the tube is beyond weld repair, replacement becomes necessary. Replacement of the damaged tube can involve a short section of the tube, called a dutchman, or a longer length that can include elbows. The amount of material replaced is dependent upon the extent of the damage to the tube, the location, and access considerations.

30. When repairs have been completed, maintenance will notify operations personnel. Operations will fill the boiler with water and start a boiler feed pump to pressurize the boiler for

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[4] The term padwelding means repairing a tube leak by placing weld material on the location of the leak to seal the hole and build up the wall thickness.

[5] In the grind out and weld repair process, a rotary grinder is employed to remove the metal around the crack. After the cracked metal is removed, a weld is made to fill the void.

a hydrostatic test. Maintenance personnel will check the repairs for integrity and recheck the rest of the boiler for additional leaks. After it has been determined that no leaks exist, maintenance personnel will remove all of their tools and materials and close the access doors. Operations will establish a coal fire in the boiler in preparation to return the unit to service.

31. In my experience, the majority of tube leaks are repaired within 48 hours or less, and are performed by as few as 2 - 3 workers.

Detroit Edison's Monroe Power Plant

32. The Monroe Power Plant is located in Monroe, Michigan, on the western shore of Lake Erie and consists of four coal-fired steam electric generating units with more than 3,100 MW of rated capacity. The plant is the third largest coal-fired plant in North America. In 2006, the plant emitted 103,520 tons of sulfur dioxide and 31,809 tons of nitrogen oxides. The Monroe Plant is in an area classified as non-attainment for ozone and $PM_{2.5}$. EPA Inspection Report of Monroe Generating Station, June 3, 2010.

33. Monroe Unit 2 began operation in 1974. Gross electrical generation of Monroe Unit 2 is 823 MW with a net capacity of 795 MW. The Unit 2 boiler was manufactured by Babcock & Wilcox, and Detroit Edison reported that heat rate is 7624 mmBTU/hr. EPA Inspection Report, June 3, 2010.

34. In testimony before the Michigan Public Service Commission, Paul Fessler, Vice President of Fossil Generation for the Detroit Edison Company, explained the need for spending significant amounts of Fossil Generation capital, operation and maintenance (O&M), and fuel handling expenditures in order to improve plant availability levels. In the matter of the Application of the Detroit Edison Company, Case No. U-15768, PF-4 (Fessler Testimony).

35. Mr. Fessler explained that: "As generating plants age, they require significant maintenance resources to keep them operating in an optimal and reliable condition. Detroit Edison has experienced, and continues to experience, operational reliability issues on major system components that need to be addressed through on-going O&M and capital investments." Fessler Testimony, PF-1,-9.

36. Mr. Fessler further explained that a "formal Boiler Tube Failure Reduction team" had been formed to study and evaluate boiler components that caused unplanned outages within the fossil fleet in order to improve unit availability and reduce maintenance costs. Fessler Testimony, PF-13. "Detroit Edison has invested significant capital and maintenance dollars over the last several years to maintain and improve generation unit availability, reduce overall plant costs. . . ." Fessler Testimony, PF-14.

The Monroe Unit 2 Rehabilitation

37. On April 22, 2010, *The Monroe Evening News*, a newspaper of general circulation in Monroe, Michigan, where the Monroe Power Plant is located, published the following story as the front page, lead article:

Extreme Makeover: Power Plant Edition
By Charles Slat
ctslat@monroenews.com

DTE Energy is in the midst of one of the largest maintenance shutdowns in the history of its Monroe Power Plant, a project that will last about 83 days, employ more than 600 construction workers and pump about $65 million into the economy.

The project has involved cutting a giant access hole near the top of the 12-story power plant to remove some parts of the massive boilers that have been in place since the generating station began operating nearly 40 years ago. “We’ve been planning this for 10 months,” said Chris Denunzio of Monroe, a project leader with URS, a San Francisco-based engineering and construction firm that’s coordinating the work.

The coal-burning plant has four boiler/turbine-generator units, each capable of generating about 800 megawatts of electricity. Each massive multi-story boiler is lined with thousands of tubes that carry water, which is converted to steam by the fire in the boiler and then used to spin turbines connected to an electrical generator.

Focused on the Unit 2 boiler, the scope of the work includes removing large sections of the tubing that has corroded or weakened over time and replacing them with new tubing. About 2,000 square feet of tubing or “water wall” sections are being replaced.

Replacement of the “economizer”, a massive array of tubed sections that act much like a radiator and increase boiler efficiency, also is part of the job. About 642 of the sections are being installed to create an 80-foot wide array. The heavy 36-foot long sections are hoisted from the ground by giant crane to a hole that was cut into the side of the plant to provide access. They then are loaded onto a crane monorail specifically built for the work inside the plant to carry them to the location where they are being installed. More than 500 lifts by crane will be needed to carry out the maintenance project, DTE officials said.

Large sections of piping in the reheater pendants of the boiler also are being replaced. It’s the first time that the plant has replaced economizer and reheater components at the same time.[6]

Each new part and new weld is inspected or checked using X-ray scanning that will reveal structural or welding flaws much in the manner a medical X-ray will show a bone fracture. “If we find something even the size of a speck of pepper, we have to grind that out,” Mr. Denunzio said.

He said the outage overall is a “large, labor-intensive job.”

Crews are working in two 10-hour shifts, six days a week to get the job done. Mr. Denunzio said an effort is made to use mainly local unionized workers, including boilermakers, pipefitters, carpenters and laborers. Labor costs represent more than $40

[6] Detroit Edison spent $15.4 million for replacement of the Monroe Unit 2 high temperature reheater and $14.5 million to replace the economizer on Monroe Unit 2. Fessler Testimony, PF-26.

> million of the project. About 100 Detroit Edison skilled-trades employees also are involved in the work.
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> Mr. Denunzio said an effort also is being made to team younger trade workers with seasoned veterans to provide a learning opportunity for the younger ones.
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> Part of the work also involves installing a new nine-ton exciter, a device that provides voltage to create the electromagnetic field needed for the generator rotor to produce electricity. The rotor itself has been removed and sent out to be rewound.
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> Boiler feedwater pumps are also being refurbished and hundreds of other parts are being replaced, reworked or serviced. The outage includes about 2,700 individual work projects.
>
> The bottom line is that the plant boiler unit will run far more efficiently and have an extended life, officials said.
>
> Similar work is being planned in the years ahead for other boilers at the plant, which continue to operate while the project is underway. The project began March 13 and might be completed by the first week of June.
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> Meanwhile, the plant also continues to be the focus of other unrelated work that is adding costly equipment to further reduce its emissions.

Charles Slat, "Extreme Makeover," *The Monroe Evening News*, p. 1A, 11A, April 22, 2010.

<u>The Monroe Unit 2 Rehabilitation Was Not Routine Maintenance, Repair or Replacement</u>

38. Monroe Unit 2 was nearing the end of a normal operating life of 30 to 40 years. After 36 years of operation, Detroit Edison determined that a number of major components of the unit required replacement. The economizer was causing increased forced outages caused by misaligned tubes and pluggage in the backpass. At the time of its replacement, approximately 10% of all economizer tubes had been plugged (i.e., taken out of service). EPA Inspection Report, June 3, 2010. The reason for the reheater replacement was because of increased forced outages in the reheater related to creep failure. *Id.* As indicated above, these major components included 2,000 square feet of waterwall sections, the economizer, the high temperature reheater, boiler feedwater pumps, the exciter, generator lead box, a dozen burner lines, partial replacement of the coal silos and "hundreds of other parts [which were] replaced, reworked or serviced." *Monroe Evening News*, p. 11A; EPA Inspection Report, June 3 2010. This $65 million project was clearly part of a plan to extend the operating life of this unit. Massive boiler rehabilitation projects to extend the life of a unit are beyond the scope of routine maintenance, repair and replacement activities.

39. Based on my experience as a plant manager at TVA, and my experience as an expert over the past decade, projects of this type are performed to reduce forced outages, to improve availability levels at the plant, and to reduce maintenance costs and maintenance outages. In my experience, the only way that an electric utility can "pay for" $65 million in rehabilitation work is to generate more electricity afterwards and to sell more electricity. Thus, major boiler work such as at the Monroe plant has a pay back period and the capital costs are viewed as an investment with an expected return. Mr. Fessler confirmed in his testimony before the Michigan Public Service Commission that Detroit Edison spent significant amounts of money in order to

improve plant availability levels by reducing forced outages, as well as to reduce maintenance costs, to include the unit rehabilitation work at Monroe Unit 2.

40. The rehabilitation project at Monroe Unit 2 is a massive project that was clearly beyond the capability of the maintenance staff at the Monroe plant. The project leader for the San Francisco-based engineering and construction firm that is coordinating construction said that planning had been ongoing for 10 months. The job has taken three months, involves 700 construction workers, and involves cutting a "giant access hold near the top of the 12-story power plant to remove some parts of the massive boilers (sic) that have been in place since the generating station began operating nearly 40 years ago." *Monroe Evening News*, p. 1A; EPA Inspection Report, June 3, 2010. The scope of the work includes "removing large sections of the tubing that has corroded or weakened over time and replacing them. . . ." These include 2,000 square feet of waterwall sections, the entire economizer, described as a "massive array of tube sections" that comes in heavy 36-foot sections. These massive sections are so heavy that they must be "hoisted from the ground by [a] giant crane to a hole that was cut into the side of the plant to provide access. They then are loaded onto a crane monorail specifically built for the work inside the plant to carry them to the location where they are being installed." *Id.* Detroit Edison officials said that more than 500 crane lifts will be necessary for the boiler rehabilitation. The cost of the economizer replacement alone cost $14.5 million. Fessler Testimony, PF-26. The boiler rehabilitation also includes replacing the entire high temperature reheater at a cost of $15.4 million, which is just downstream of the secondary superheater. The project leader described the boiler rehabilitation as a "large, labor-intensive job." *Monroe Evening News*, p. 11A.

41. The rehabilitation at Monroe Unit 2 is not and was not treated as ordinary or routine maintenance by Detroit Edison. The Monroe maintenance staff kept the boiler operating with routine maintenance for nearly 40 years before the decision was made to perform a $65 million rehabilitation. As Mr. Fessler indicated in his testimony to the Michigan Public Service Commission, Detroit Edison distinguishes between major capital projects designed to improve boiler operation, increase efficiency or availability and/or address operating and maintenance problems related to the boiler and turbine systems (PF-17), and "[n]on-periodic outage activity reflect[ing] standard 'day-to-day' work that is done to maintain plant equipment. This includes inspections, servicing, and minor maintenance that does not require the unit to be taken offline to complete as well as expenses associated with forces outages and derates." Fessler Testimony, PF-30. For example, maintenance expenses that are for standard day-to-day work done to maintain the plant equipment in its current condition are recorded in O&M accounts such as Account 512 "Maintenance of Boilers." Fessler Testimony, PF-32.

42. In contrast, major capital projects are included in the Fossil Generation Plant Improvements Projects (PIP) capital budget which "is approved annually for expenditures during the next calendar year. . . . Requests for capital require initiation of an approved project request that includes a detailed explanation of the project and an initial estimate of cost and benefits." Fessler Testimony, PF-14.

43. This is the first time that the complete economizer and complete high temperature reheater have been replaced in 36 years of operation, and certainly the first time that the Unit 2 boiler has been rehabilitated. EPA Inspection Report, June 3, 2010.

44. The cost of the Monroe Unit 2 rehabilitation is $65 million.

45. Based on the facts described above, it is clear that the massive boiler rehabilitation at

Monroe Unit 2 is not routine maintenance, repair or replacement. The basis for this conclusion is summarized below:

> The nature and extent of the rehabilitation was massive, requiring resources clearly beyond the capability of the existing maintenance staff. Major components of the boiler are being replaced including the economizer and the high temperature reheater, which are critical to the function of the boiler. Monroe Unit 2 has been out of service for nearly three months while the unit is being rehabilitated and cannot generate electricity during this time. Based on my experience, the work could not have been carried out by plant maintenance staff, and the materials, equipment and resources necessary to carry out the boiler rehabilitation came from outside the plant. The reheater was supplied by the original equipment manufacture, Babcock & Wilcox, and the economizer was supplied by Doosan Babcock. EPA Inspection Report, June 3, 2010. A unit rehabilitation of this magnitude and complexity could only have been done by outside specialty contractors using hundreds of workers with heavy equipment brought to the job site specifically for this work, and with components specifically designed and engineered for this project.
>
> The purpose of the project was to rehabilitate an aging generating unit that will extend the life of the unit, improve unit availability by reducing forced outages, and reducing maintenance costs and outage time, and as the newspaper article said, to "boost . . . efficiency."
>
> Detroit Edison did not treat the rehabilitation as ordinary or routine. This project was neither accounted for as routine maintenance, nor was it presented to the Michigan Public Service Commission or the public as routine. As characterized by the headline in the Monroe Evening News, it was an "Extreme makeover."
>
> The time necessary for the planning and execution of the rehabilitation greatly exceeded the amount of time necessary for routine maintenance, repairs or replacements.
>
> This was the first and only replacement of major boiler components and the first boiler rehabilitation in nearly 40 years of operation. Based on my experience in the industry and my review of capital projects in other enforcement cases, a rehabilitation of this magnitude, scope and cost is highly unusual in the industry. Of the hundreds of major capital projects I have reviewed, I know of only a handful of rehabilitation projects at coal-fired units that approach this project in cost or that rival this one in nature and extent.
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> The project was costly in both absolute and relative terms. The unit rehabilitation cost approximately $65 million and at least $30 million of that was charged to a capital account rather than a maintenance account.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Mike Hekking

Alan Michael Hekking

Executed on July 23, 2010 in Central, South Carolina